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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,827	01/04/2002	Upendra V. Chaudhari	YOR920010539US1(590.076)	7326

35195 7590 03/15/2006

FERENCE & ASSOCIATES
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EXAMINER	
PIERRE, MYRIAM	

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/042,827	CHAUDHARI ET AL.	
	Examiner	Art Unit	
	Myriam Pierre	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *121* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☒ Claim(s) *1, 11, and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's Amendment filed 12/12/2005, responding to the OA of 08/10/2005, Examiner acknowledges amendment to the claims 1, 11 and 21; examiner withdraws objection to drawing.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/12/2005 has been entered.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The added material which is not supported by the original disclosure is as follows: "audio and speech".

Response to Arguments

4. Applicant's arguments have been fully considered and the applicant's arguments are not persuasive for the following reasons:

Applicant argues that Passera (6,272,449) is in stark contrast to the application because "as discussed in the specification and in the independent claims, the instant invention obtains input data and facilitates data clustering of that input data independent of any system or model". Examiner respectfully disagrees. Passera has a system which clusters data into two subspaces 1-2, and has the option of being modeled or independent of a model, Fig. 1 element 18 and 11. Passera does teach input data and facilitates data clustering of that input data independent of any system or model.

Applicant argues that Passera does not disclose data clustering input data independent of any system. Examiner respectfully disagrees. Passera has a system which data is clustered into two subspaces 1-2, and has the option of being modeled or independent of a model, Fig. 1 elements 18 and 11. Passera does teach data clustering input data independent of any system.

Regarding applicant's argument with respect to 35 USC 103.

In response to applicant's argument that there is no suggestion to combine the references, or that there is no natural connection from the super-vectors of Kuhn et al. (6,343,267), now referred to as Kuhn, to the input spaces of Passera. Kuhn's implements an eigenvector projection in order to improve speed and efficiency at which speaker and environment adaptation is performed, as taught by Kuhn, (col. 2, lines 16-19), Passera teach modeling input (Fig. 1 element 10) and Kuhn models input for speech adaptation, observed data from speakers (col. 5

line 24, 29 and col. 8 lines 60-62). Thus, one would be motivated to combine Passera's input model with Kuhn's speech adaptation data from speakers in order to improve speaker adaptation, as taught by Kuhn (col. 1 lines 39-40, 61-62 and col. 2 lines 16-19).

The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the following obviousness statements still stand.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 11-13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Passera (6,272,449) in view of Kuhn et al. (6,343,267).

As to claims 1, 11 and 21, Passera teaches,

creating predetermined (predetermined, col. 4, line 60) number of non-overlapping (CHAID, chi-squared automatic interaction detection, col. 1, line 35) subsets of the input data ("data set" or "subspaces", Fig. 1, elements 18-19, col. 1, lines 31-34); and

creating a predetermined number of non-overlapping subsets by

splitting the input data recursively ("data splitting model" splits input into subspaces, "recursively split", col. 4, lines 16-19, 61-62 and Fig. 1, element 16).

said clustering being independent of any model wherein the splitting of the input data into predetermined number of non-overlapping subsets does not depend on a model (Fig. 1 element 18; and col. 4 lines 2-5; subspaces 1-2 are clustered data that are independent of any model (element 11) and is non-overlapping).

obtaining input data ("input data set", Fig. 1, element 10)

Passera does not explicitly teach obtaining audio and speech input data.

However, Kuhn et al. do teach speech and audio data (col. 14 lines 63-67 and col. 15 lines 1-4)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the data input of Passera into the speech and audio data of Kuhn et al., because Kuhn et al. teach that this would accommodate the needs of both speaker adaptation and environmental adaptation, col. 15 lines 5-13.

As to claims 2 and 12, which depend on claims 1 and 11, Passera teaches,

initially splitting the input data into at least two sets of output data ("input data set", "data splitting module", output is $subpace_{1\text{-}2}$, Fig. 1, elements 10, 16 and 18-19).

As to claims 3 and 13, which depend on claims 2 and 12, Passera teaches,

splitting the at least two sets of output data recursively (output and "data-splitting" module recursively splits subspaces, col. 4, lines 61-62, col. 5, lines 28-29 and Fig. 3, elements 34 and 36); and

repeating the recursive splitting of output data sets (Fig. 4, see loop, elements 46-49) until predetermined number of non-overlapping subsets is obtained (col. 4, lines 59-60).

5. Claims 4-9, 10 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Passera (6,272,449) in view of Kuhn et al. (6,343,267).

As to claims 4 and 14, which depend on claims 2 and 12, Passera does not explicitly teach an eigenvector decomposition relating to the input data.

However, Kuhn et al. do teach

determining an eigenvector decomposition relating to the input data (eigenvectors generated from speakers, col. 7, lines 8-9).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to implement Passera's model into Kuhn et al.'s eigenvector decomposition via data clustering because Kuhn et al. teach that this would improve speed and efficiency at which speaker and environment adaptation is performed, col. 1, lines 39-40 and 45, 50-59.

As to claims 5 and 15, which depend on claims 4 and 14, Passera teaches,

creating a predetermined number of non-overlapping subsets (col. 4, lines 59-61).

Passera does not explicitly teach determining eigenvector projections.

However, Kuhn et al. do teach

adapted to determine vector projection coefficients (coefficients, col. 7, line 64) onto the set of eigenvectors ("eigenvector", col. 8, line 52 and col. 2, line 34) in the eigenvector decomposition ("eigentransformation vectors", col. 16, line 35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement Passera's data subsets into Kuhn et al.'s eigenvector projection, because Kuhn et al. teach that this would improve speed and efficiency at which speaker and environment adaptation is performed, col. 2, lines 16-19.

As to claim 6 and 16, which depend on claims 5 and 15, Passera does not explicitly teach the recited probability density.

However, Kuhn et al. do teach determining a probability distribution for the vector of projection coefficients (probability density for vector...from coefficient, col. 5, lines 30-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement Passera's data subsets into Kuhn et al.'s predetermine subset model for determining probability density because Kuhn et al. teach that this will improve speed and efficiency at which speaker and environment adaptation is performed, col. 1, lines 39-40, 61-62 and col. 2, lines 16-19.

As to claim 7 and 17, which depend on claims 6 and 16, Passera teaches,

yield the at least two sets of output data based on their relation to the threshold ("threshold value", col. 5 lines 37-41, 46-47; Fig. 5 step 52; and Fig. 4 $subspace_{1-2}$).

Passera does not explicitly teach of relating the threshold to a probability distribution value.

However, Kuhn et al. teach maximum likelihood involving probability density (col. 5, lines 30-31 and col. 10, lines 31-33); and

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement Passera's data subsets into et al.'s assign threshold values based on probability density for clustering accuracy because Kuhn et al. teach that this would provide the probability distribution function description of the plurality of parameters based on observed data from speakers, thus weights the data which is informative, col. 5, line 24, 29 and col. 8, lines 60-62.

As to claims 8 and 18, which depend on claims 7 and 17, Passera teaches,

teaches inherent N-1 threshold values ("threshold value", col. 5 lines 37-41, 46-47; Fig. 5 step 52; and Fig. 4 $subspace_{1-2}$).

As to claim 9 and 19, which depend on claims 8 and 18, Passera teaches

the threshold is a value of the function relating to the projection coefficients for which the probability distribution function equals m/N, where m is a number from 1 to N-1 (col. 5 lines 37-41, 46-47; Fig. 5 step 52; and Fig. 4 $subspace_{1-2}$; the equal probabilities of correct clustering, one needs to set an equal probability threshold, for 2 clusters setting it to ½, for 3 clusters to 1/3, etc).

6. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Passera

(6,272,449) in view of Beigi et al. (6,253,179).

As to claim 10 and 20, which depends on claim 1, Passera teaches,

data clustering (col. 1, line 12).

Passera does not explicitly teach of speaker verification.

However, Beigi et al. do teach relates to the enrollment of target speakers in a speaker verification system (speaker verification and clustering of data, col. 8, line 19-20 and 44).

Therefore, it would have been obvious to one of ordinary skill

in the art at the time of the invention to implement Passera's data subsets into Beigi et al.'s speech data clustering in a speaker verification system because Beigi et al. teach this would provide training data for speaker models, Abstract and col. 8 lines 19-20 and 44.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, see attached PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myriam Pierre whose telephone number is 571-272-7611. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MP

2/27/2006

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER